



# Life Cycle Demilitarization Considerations for IM Development



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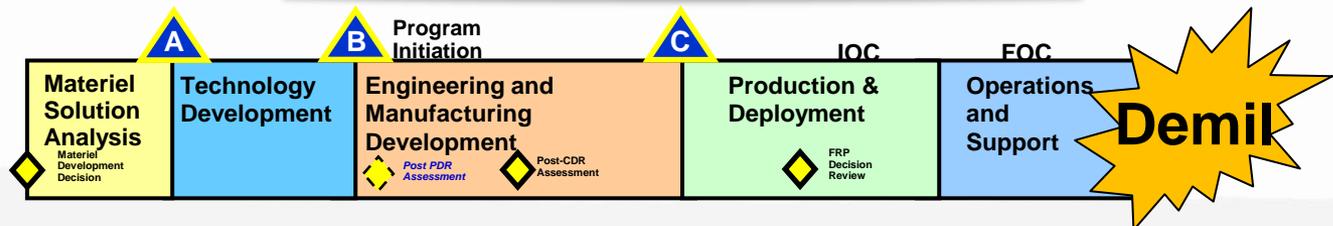
# SMCA & PM Demil Mission

- Single Manager for Conventional Ammunition (SMCA)
  - Established to gain efficiencies in the procurement, production, and **demilitarization** of **conventional ammunition** for **all Military Services** (DODD 5160.65)
- PEO Ammo delegated as SMCA Executor in 2002; OPM Demil established to execute the demil mission.



**Our Mission:**  
 Perform Life-Cycle Management for Demilitarization of  
 Conventional Ammunition for the  
 Department of Defense

All Services – All Conventional Ammo  
 Currently Over 7,000 DODICs





# A Demilitarization Challenge



$\times (1.82)^3$

**> \$3.3B  
Liability  
(& Growing)**





# BLUF – Bottom Line



## How do I demil this stuff?

- ➔ Affordable – Cost Efficient
- ➔ Operations Safety
- ➔ Environmentally Compliant – Friendly





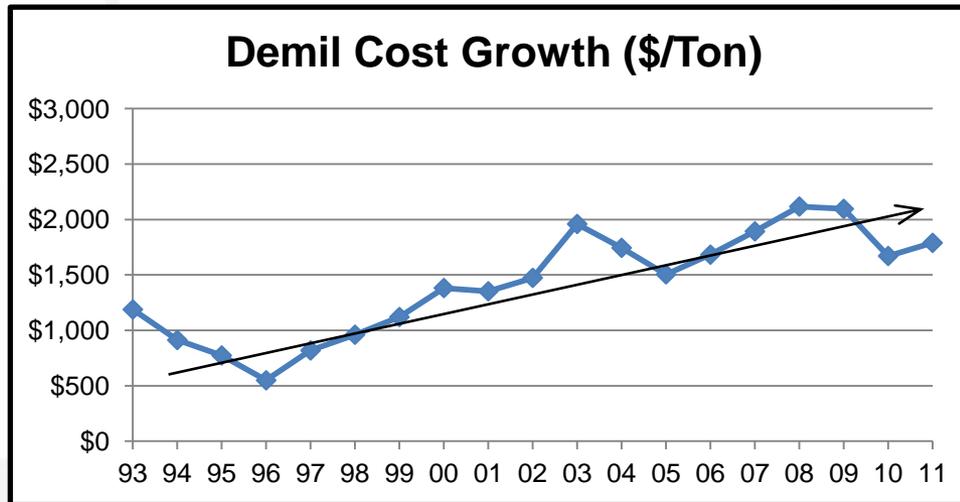
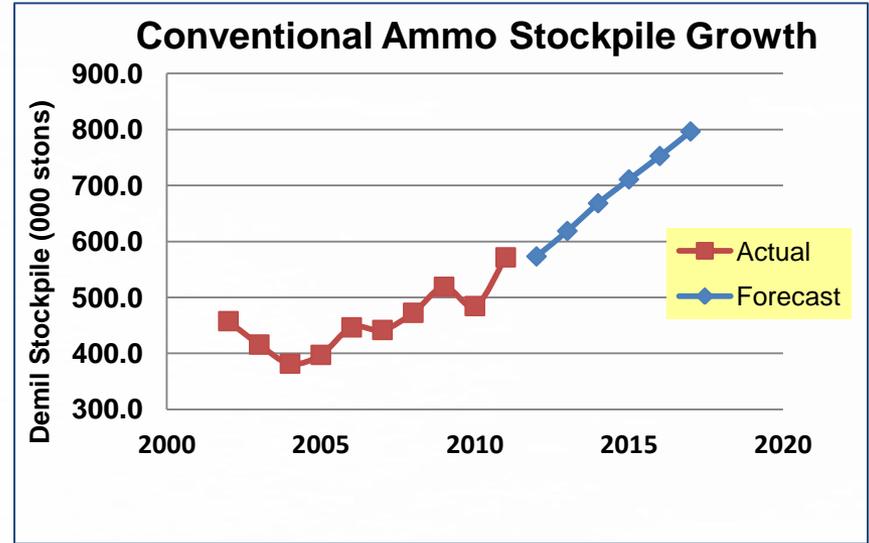
# Demil Stockpile & Cost Growth

## Total Conventional Ammunition Stockpile\*

Demil  
34%



\*Covered Tonnage at Depots





# How Demil is Done



Recover/Recycle/Reuse

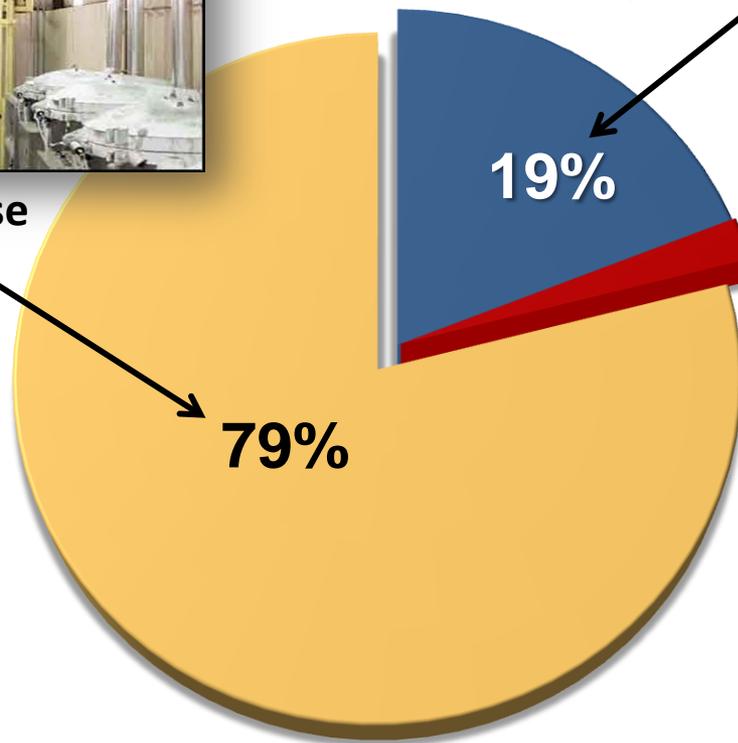
Open Burn/  
Open Detonate



100% done at  
Organic sites

2%

Contained  
Destruction



## Stratification Process:

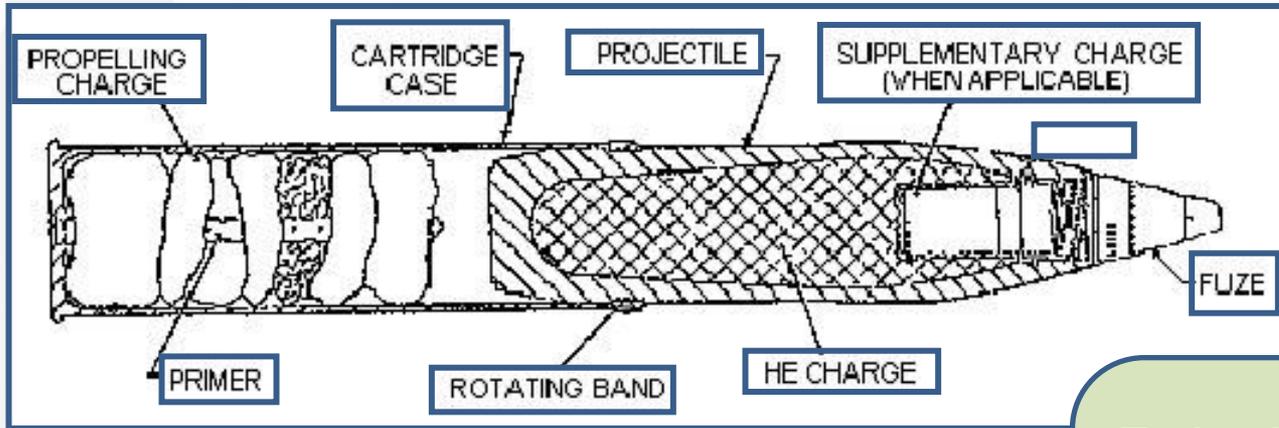
- Use items to support training/testing
- Cross Level within DoD
- Offer to Other Government Agencies
- Foreign Military Sales
- Free transfer to Allies
- Into Demil Account (B5A)

Percentages reflect FY11; includes organic and commercial





# Closed Disposal Technology



**DEMIL IS COMPLEX!**

**Disassembly**

- Technology Thrust Areas:**
- Disassembly
  - Removal
  - Recovery & Reuse
  - Destruction
  - Waste Stream Treatment

**Explosive Components**

**Projectile**

**Propellant**

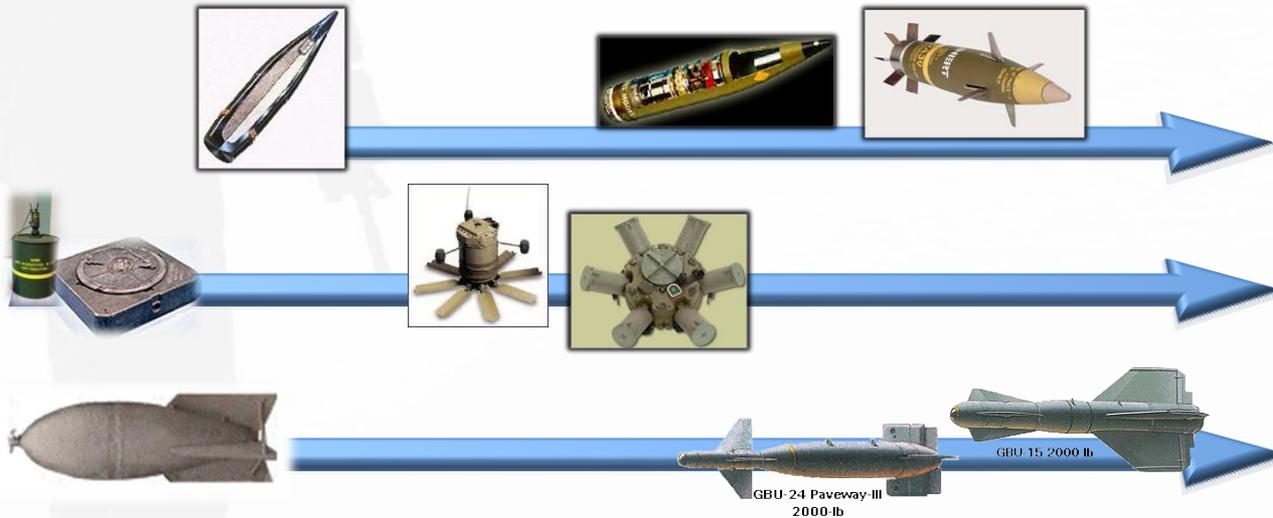
**Inert Components**





# Future Challenges: A Case for DFD

- Increasingly more complex munitions – IM, for example
- Existing demil infrastructure does not work – new development, technologies, or materiel solutions
- Designs not lending to efficient demil, increased cost



*A holistic approach during development is needed to gain efficiencies – Design for Demil!*





# Design for Demilitarization (DFD)

- DoD is a strong advocate for application of DFD.
- DFD is early consideration of demil impacts in design – provides opportunity to gain life cycle cost reductions
  - Use existing infrastructure vs new capital investment
  - Demil process efficiency and economical recycling/reuse
  - Reduced environmental & safety impacts
  - Ultimately – expedited stockpile reduction and logistics enabler
- DFD includes heavy emphasis on Systems Engineering –
  - incorporation of demil along with other requirements

*Implement Early to Maximize Benefit*





# DFD Policy



## DODI 5000.02

- ***“During the design process, PMs shall ... plan for demilitarization”***
- ***“... demilitarization shall be considered during system design.”***

## Published OSD/Services Policy:

- USD (AT&L) Policy Memorandum
- DoD I 5000.02
- Defense Acquisition Guidebook
- DoD I 5160.68, SMCA Instruction
- AR 70-1, Army Acquisition Policy
- DA PAM 70-3, Army Acquisition Procedures
- OPNAVINST 4520.1B, Navy Demil Policy
- AFMC I 21-131, Demil Requirements
- MARCORSSYSCOMO 8020.1, Demil Requirements



ACQUISITION,  
TECHNOLOGY  
AND LOGISTICS

THE UNDER SECRETARY OF DEFENSE  
3010 DEFENSE PENTAGON  
WASHINGTON, DC 20301-3010

AUG 04 2008

MEMORANDUM FOR SECRETARIES OF THE MILITARY DEPARTMENTS  
CHAIRMAN OF THE JOINT CHIEFS OF STAFF  
COMMANDER, U.S. SPECIAL OPERATIONS COMMAND  
DIRECTOR, OPERATIONAL TEST & EVALUATION  
DIRECTORS OF THE DEFENSE AGENCIES

SUBJECT: Design for Demilitarization of Conventional Ammunition

Demilitarization is an ever-present problem in the Department – especially for conventional ammunition due to the inherent safety hazards and environmental classification as a hazardous material. Conventional ammunition, for the purposes of this memorandum, is defined as (in DoD Directive 5160.65, Single Manager for Conventional Ammunition) encompassing any item containing propellants, explosives, or pyrotechnics.

The current U.S. military-based demilitarization stockpile of conventional ammunition is approximately 500 thousand short tons, and growing. This represents a cost to the Department not only in dollars, but also in operational readiness. Conventional ammunition systems that do not incorporate demilitarization considerations into their design are prone to present a variety of challenges at the end of the life cycle during demilitarization operations. These systems increase life cycle costs and create

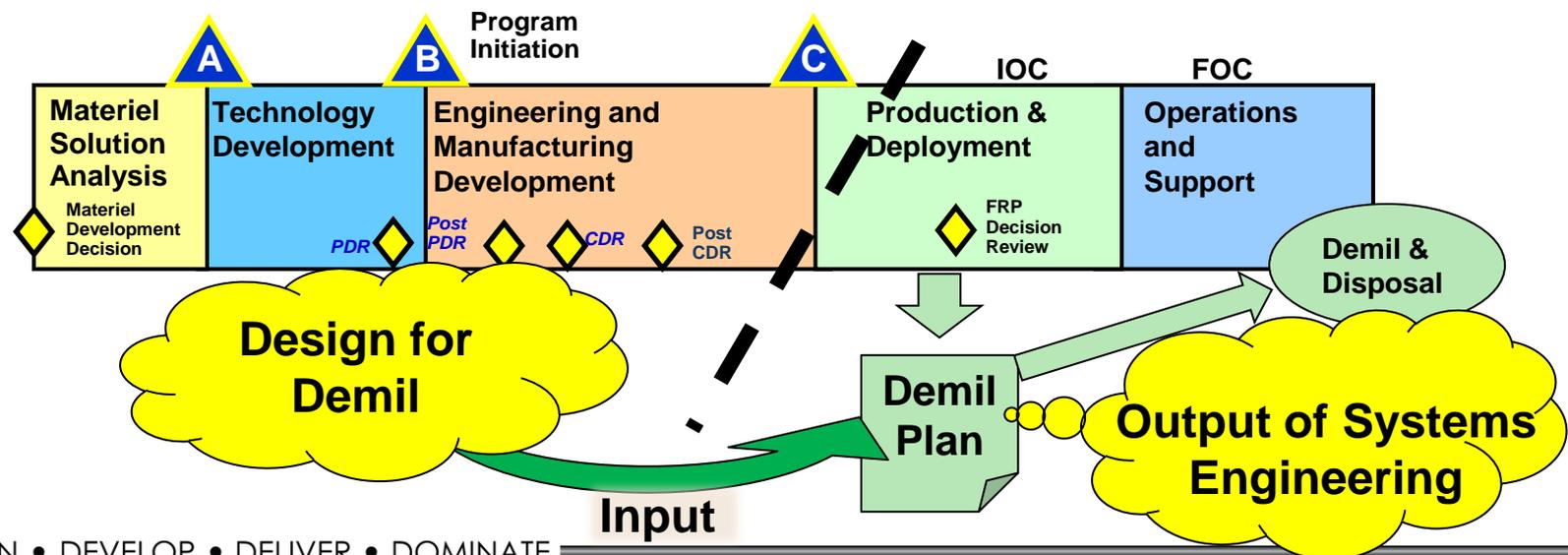
**OUSD(AT&L) Policy:**  
***“... include in ... acquisition documentation ... how (you) ... intend to address demilitarization design requirements throughout system design.”***





# DFD Implementation

- Integrate demil throughout standard acquisition activities – programmatic and technical
  - ✓ Tech Dev/Acquisition Strategy
  - ✓ SOW/Specs/Source Selection
  - ✓ Systems Engineering & Tech Reviews
  - ✓ Test & Evaluation
  - ✓ Program IPT representation
  - ✓ Program/Milestone Reviews
  - ✓ Life Cycle Cost estimates
  - ✓ Demil Plan





# Technical Considerations

- Energetic Fills
  - Ease of removal and processing (e.g. melt cast vs cast cure)
  - Economical reuse/recycle (e.g. explosive separation from binders)
- Engineering Design (Venting, Warhead, Packaging, etc.)
  - Ease of disassembly
  - No special tools required
- General
  - Efficiently accommodate demil technology
  - Ensure safety for demil operators

*Performance is paramount, but life cycle should not be neglected; DFD can be low cost if done early*



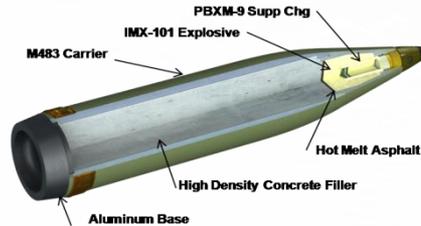


# IM Example

Now: Autoclave Melt-Out



New IM Round:  
M1123 (IMX-101)



Future: Modified Autoclave



## Added Costs:

- Develop new fixtures & procedures
- Capital investment @ multiple depots



## Other More Complex Munitions:

- Need entirely new processes/facilities
- Lost value (inability to reuse explosive)
- Difficult disassembly

**EOD  
Challenge  
too!**





# DFD IPT & Outreach



- Joint Service IPT developing DFD guidance, tools, & resources
- DFD Handbook in 2012
  - Provides acquisition guidelines, technical best practices, policy reference, and demil tutorial
- Acquisition “Roadshow” in 2012
- Metrics/oversight process in development; coordinating with OSD





# Points of Contact



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# QUESTIONS

